General Intelligent Design (GID) and Mindom Behavior

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Abstract: For the physical sciences, the concepts of randomness and determinism are investigated. Via the GGU-model, GID and mathematical analysis, it is shown that any apparent random or lawless physical behavior within our universe is actually one of the most powerful indications that our universe is designed by a higher-intelligence.

1. Introduction.

Physical science assumes that a string of symbols or images taken from a "language" is an accurate description for an actual physical event. Such correspondences between physical behaviors as represented by "strings of symbols or images," in one form or another, are the absolute foundations of modern physical science. In all that follows, it is assumed that such correspondences are being used. A basic problem is that when individuals are trained in the physical-sciences a language is learned that insists that physical entities or processes "produce" physical behavior. Then the physical laws give relationships between the appropriate parameters involved. This is not the view from the General Grand Unification Model. In order to properly maintain this fact, it is required that one alter how statements are presented.

2. Is Physical Behavior Random or Deterministic?

In [1, pp. 48-54] and under limited conditions, Bohm gives a descriptive explanation for Brownian motion and similar molecular behavior within liquids and gasses. These explanations are also predictions that under specific general conditions such behavior is certain. [In what follows, a few terms defined or discussed in reference [3] are used.] In [4], it is formally established and informally discussed in [3], that such descriptions must rationally follow from a science-community's logic-system and from the mathematical operator called a consequence operator that characterizes such logic-systems. As defined in [3], this means that any behavior discussed in this manner is intelligently designed. [In a note at end of this article, I describe the difference between the terms "pre-design" and "design." Further, it is noted that there can be no moral characterizations assigned to any physical behavior except for that initiated by human choice.]

Throughout these Bohm descriptions, another concept is employed. He states that, within this limited context, individual molecular motion is "random or irregular."

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Bohm points out that this has led to the assertion that such individual behavior is lawless; it is neither sustained nor guided in any manner. Indeed, for certain scenarios "randomness" is often considered as part of a "casual statement" - the random cause - notion. Within the limited context employed by a specific science-community, where the term "random" is used to discuss physical behavior, it is rather subjective in character. It seems to mean that the behavior is "unpredictable," that it is not guided in its behavior using certain science-community logic-systems. Further, the behavior may seem to have no "purpose," where the notion of "purpose" is considerably philosophic in character.

There is a significant philosophic type of "randomness." This **general** or **absolute randomness** asserts that such behavior

> . . . is not considered as being arbitrary and lawless relative to a certain limited and definite context, but rather as something that is so in all possible contexts [1,p. 63].

Since the word "all" is used here, any absolute verification of the "in all possible contexts" is not possible except by induction, a method that cannot lead to absolute fact. Indeed, as shown in [3], this philosophic assertion is false if science-communities allow the language and logic-systems they use to be extended so that the feature termed "randomness" can be further investigated. Relative to human comprehension and operationally, general randomness certainly means that there is no language, no theory, that will "ever" be able to predict the exact occurrence of an event. Thus, if you have one event, then this would apply to any other event in a finite sequence of events. Further, there could not be an exact relation that requires two or more events to be in a specific order, for then in the context of "order" the behavior is neither arbitrary nor lawless.

This lack of order leads to the union consequence operator notion. And this one general randomness requirement and the GGU-model leads specifically to behavior that's guided by intelligently designed actions. Using this consequence operator approach, "single" events can always be considered as produced by an intelligent action. Depending upon the theory used by a science-community, other stronger more specific intelligent actions can also guide "unordered" behavior. [For the definition of this weak consequence operator, see "Further Explanations Page 153" in [A].]

As to the claim that randomness is an absolute and final feature of a theory, Bohm states:

> . . . the assumption of the absolute and final character of any feature of our theories contradicts the basic spirit of the scientific method, which requires that *every* feature be subject to continual probing. . . . [1, p.132]

Thus, if a recognized scientific method is used, such as mathematical modeling, than adjoining to a science-community's logic-system further explanations for apparent lawless behavior as it relates to a particular theory, does not violate the scientific method, according to Bohm and many others. In this article, the terms **random** and **randomness** mean the assumption that individual physical events are, at the least, "lawless."

There are two forms of the notion of "lawless" behavior. The form of randomness that is restricted to a particular scientific language and theory, I term as **theory-randomness**. This form states that, for a particular theory, its language and methods used cannot predict the occurrence of a particular physical event. Then absolute randomness implies that not only can no humanly created theory predict the occurrence of a particular physical event, but such random behavior is not the product of any physical law known or unknown. Of course, both of these are unprovable assumptions.

This lawless concept is in direct conflict with the notion of **determinism**.

> **Mathematical determinism** is defined as follows: Assume that the behavior of a physical-system is defined by a set of parameters expressed in a specific mathematical form. If you are given the exact expressions for a specific set of these parameters, then there exists a relation, implicit or explicit, between these expressions that allows one to predict the mathematical expressions for all of the remaining parameters.

But we also have a more general notion of determinism.

> **General determinism** is defined as follows: Assume that the behavior of a physical-system is defined by a finite set **A** of characteristics taken from a language L. If you are given a second finite set of characteristics **B** contained in L, then there exists an implicit or explicit logic-system of various specific types that allows one to predict the set **B** from **A**.

Technically, mathematical determinism is an example of general determinism. Further, by a special construction both A and B can be considered as containing but one image.

3. Experimental Examples.

Suppose that it's possible to conduct the following experiment with photons and a piece of flat glass. You place a photon detector that will "click" each time a photon is "reflected" from the glass at the angle of 45 degree to the flat glass surface. You also count the photons, one at a time, as they leave a photon generator. You know the photon speed and can tell whether a specific generator emitted photon has caused the detector to "click;" indicating whether the generated photon is "reflected" or scattered within the glass. When there is no "click" for a generated photon, you write down a 0. But, when for an emitted photon there is a "click," you write done a 1. During each of three days, you conduct this experiment with 20 generated photons. This yields the following three "partial" sequences of zeros and ones.

$$(a)\ 0,0,1,0,0,1,0,0,1,0,1,1,1,0,0,1,1,0,1,1$$

$$\text{(b)}\ 1,0,0,0,0,1,1,0,0,0,1,1,1,0,0,0,0,1,0,1$$

$$\text{(c)}\ 1,1,1,1,0,0,1,0,1,0,0,1,0,0,0,1,0,1,1,1$$

Studying these partial sequences of zeros and ones, it might appear that there is no mathematical expression that will deterministically generate partial sequences that "look" exactly like these. Indeed, one might conclude that they appear to be "randomly" selected. Suppose that these zeros and ones pass every statistical test for independent or individual "random" behavior. If we, however, add the numbers 0 and 1 in succession and create a ratio of the result of these additions divided by the number of zeros and ones we have added, we get the following partial sequences of rational numbers, the relative frequencies.

$$\text{(a)}\ 0/1, 0/2, 1/3, 1/4, 1/5, 2/6, 2/7, 2/8, 3/9, 3/10, 4/11, 4/12,$$
$$6/13, 6/14, 6/15, 7/16, 8/17, 8/18, 9/19, 10/20$$
$$\text{(b)}\ 1/1, 2/2, 2/3, 2/4, 2/5, 3/6, 4/7, 4/8, 4/9, 4/10, 5/11, 6/12,$$
$$7/13, 7/14, 7/15, 7/16, 7/17, 8/18, 8/19, 9/20$$
$$\text{(c)}\ 1/1, 2/2, 3/3, 4/4, 4/5, 4/6, 5/7, 5/8, 6/9, 6/10, 6/11, 7/12,$$
$$7/13, 7/14, 7/15, 8/16, 8/17, 9/18, 10/19, 11/20$$

Notice that under this addition law, the last ratios in each case are equal to or nearly equal to 1/2. This does not mean that these ratios will stay "near to" 1/2 if I continue these experiments to say 30 generated photons. But, statistical analysis seems to indicate that there is a high probability that if I continue these partial sequences "far enough," then the last term in the sequence will more closely cluster about the number 1/2 and stay "near to" this number as I continue adding more and more of the zeros and ones.

Suppose that you use certain procedures that assert that this is a type of "randomness" for individual events and indicates indeterminate unguided behavior. One might conclude that such sequences of zeros or ones (or both, of course) cannot be deterministically generated. That is, with the appropriate values for physical parameters and a specific language, you cannot predict the sequence of successes or failures. Thus, from this aspect of knowledge, you conclude that the events, and the zeros or ones are "randomly" generated. [Note that technically one could have, at least, a finite sequence of all zeros or all ones.]

In reference [7], one of the foremost statisticians, Mark Kac, presents what has been known for more than one hundred years. If you extended your language to include additional notions from basic mathematical analysis, then the claim that such sequences are not guided exactly is false. Take any real number x such that $0 < x < 1$. Then consider the completely deterministic sequence $2x, 4x, 8x, 16x, ..., (2^n x), ...$ Now consider the following additional rules. For each of these numbers consider the fractional part. For example, suppose you took $x = (1/2)^{1/2}$. Then we have the sequence $2x = 1 + .414, 4x = 2 + .83, 8x = 5 + .66, 16x = 11 + .31, \ldots$. Now to get the sequence of zeros or ones, you follow the deterministic rule that states; write down a 0 if the fractional part of the number is $< .5$ and write down 1 if the fractional part is ≥ 0.5. Hence, in this case, the sequence would look like $0, 1, 1, 0, \ldots$.

There is a mathematical statement that says that there exists a vast "quantity" of irrational numbers x that in this deterministic manner will generate sequences of zeros or ones that cannot be differentiated from such event sequences that are assumed to be "randomly" produced. Of course, these sequences have the exact same relative frequency "convergence" property. Although there exists a process that does deterministically generate such event sequences, only using the data-set 0,1,1,0, . . . and practical methods, individuals can convince themselves, by application of informal generalization, that no deterministic expression exists that generates such data-sets. A reason why this may appear to be the case is that all such "x" are irrational and essentially unknown to us. But, the assertion that members of such a set are randomly (i.e. not deterministically) produced is false. This is mathematical determinism since given an "x" the parameters 0 or 1 are predicted.

If "x" were a rational number, numbers that we can explicitly represent, then our ability to detect such designed patterns as being deterministically produced would be greatly enhanced. [[However, for a higher-intelligence there are higher-forms of rational numbers. In mathematical statements, one can represent any real number $\neq 0$ in the form $\lambda/10^\omega$, where λ and ω are hyper-natural numbers. Numbers of this type can be used as substitutions for such irrational numbers and they will produce, using an extension of this deterministic description, the same event sequences when restricted to the standard world.]]

Note that in [2, p. 228] is another deterministically obtained sequence of successes and failures that represent "the flip of a fair coin," where the sequence of relative frequencies is claimed to converge to 1/2. This example requires no special "numbers" such as "x" above. Further, in [2] Chapter 5, are examples of deterministic chaos. In [5] is displayed a deterministically obtained collection of success and failure events that will not produce a convergent sequence of relative frequencies that converges to any $p \in [0, 1]$. This is that sequence.

Start with $\frac{0}{1}$. Now you increase the numerator number by 1 until you get $\frac{1}{2}$. Then you repeat the numerator numbers until you get $\frac{1}{3}$. Then increase each numerator by 1 until you get $\frac{1}{2}$, etc. As an example, consider $\frac{0}{1}, \frac{1}{2}, \frac{1}{3}, \frac{2}{4}, \frac{2}{5}, \frac{2}{6}, \frac{3}{7}, \frac{4}{8}, \frac{4}{9}, \frac{4}{10}, \frac{4}{11}, \frac{4}{12}, \frac{5}{13}, \frac{6}{14}, \frac{7}{15}, \frac{8}{16}, \frac{8}{17}, \frac{8}{18}, \frac{8}{19}, \frac{8}{20}, \frac{8}{21}, \frac{8}{22}, \frac{8}{23}, \frac{8}{24}, \ldots$. The only thing one needs to do is to show that the points at which you alter the numerators or repeat them will always occur after a finite number of steps. Although such sequences are "designed," it is often claimed that this type of cumulative event sequence can occur if physical-system behaved is purely random in character. However, note that Theorem 2.1 can be easily modified to show the existence of an ultralogic that generates any such sequence if such a sequence does, indeed, model physical-system behavior. So, if such sequences do correspond to certain aspects of how a physical-system developments, then it can still be considered as designed by a described algorithm.

The above sequence can be generated by a type of deterministic algorithm.

(1) For this example, start with 0/1, 1/2. The second ratio is of the form $a/2a$, where in this case $a = 1$.

(2) From each such form, let $M = a$. Then consider the sequence obtained by letting n vary from 1 to M and each of the finitely many terms have the form $a/(2a + n)$.

(3) This yields, after the M iterations, the rational number $b/3b$. (For the example, this yields the next rational number as 1/3.)

(4) Next, from this form, generate the finite set of rational numbers of the form $(b + n)/(3b + n)$ as n varies from 1 to $M = b$. (For this example, this yields the rational number 2/4.)

Note that as one progresses the "a" and "b" vary. Thus, continuing this iteration process with expressions of the form $x/(2x + n)$ and $(y + n)/(3y + n)$ further yields

$$0/1, 1/2, 1/3, 2/4, 2/5, 2/6, 3/7, 4/8, 4/9, 4/10, 4/11, 4/12, 5/13,$$

$$6/14, 7/16, 8/16, 8/17, 8/18, 8/19, 8/20, 8/21, 8/22, 8/23, 8/24, 9/25, 10/26,$$

$$11/27, 12/28, 13/29, 14/30, 15/31, 16/32, 16/33, \ldots = a_i,$$

which, for the displayed rational numbers, is the above sequence extended somewhat further.

(5) Notice that as one generates these relative frequencies, the number of distinct rational numbers between the occurrence of the 1/2 and 1/3 is (in order) 0,0,1,1,3,3,7,7, . . . It seems that these numbers are increasing. Also notice that for any natural number M, there is an n and k such that $n \geq M,\ k \geq M$ and $|a_n - a_k| = 1/6$. Thus a_i is not Cauchy and does not converge.

A corresponding sequence of successes or failures that yields such a sequence of relative frequencies and does not appear to be randomly obtained since the above pattern appears detectable is

$$0, 1, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1, 1, 1, 1, \ldots$$

Although, thus far, it has not been demonstrated that each <u>physically</u> generated sequence of relative frequencies that is claimed to converge can be deterministically obtained by expressions we comprehended, one can state as a fact *that various "assumed" randomly generated sequences of relative frequencies are <u>rationally obtainable</u> and, hence, sequences of successes or failures depicting such events are intelligently designed and satisfy a deterministic expression.* Since statisticians use mathematics to analyze such data-sets, and we now have a clash between claimed requirements and mathematical fact, Kac writes:

> From the purely operational viewpoint, however, the concept of randomness is so elusive as to cease to be viable [7, p. 406].

(This Kac statement can be interpreted in various ways and is independent from the results discussed here.) Although my above-italicized statement is fact, some physical scientists object to the use of this fact since, in my example, the x in the expressions is not, as yet, knowable by us although the sequence of zeros or ones can be the same as one generated by photon reflection. However, there is a type of absolute counter to this rejection.

In the subject of Quantum Electrodynamics (QED), the basic interactions are produced by "virtual" photons. By very definition, these assumed "physical" objects couldn't be physically displayed in objective reality. They are used to mediate sequences of physical interactions within the microphysical world. Although QED predicts how gross matter will behavior relative to these interactions, the interactions themselves cannot be physically displayed within objective reality. Some individuals claim that these "hidden" QED processes are purely imaginary in character and simply *model* what, in reality, are humanly incomprehensible processes.

Hence, for such sequences of physically observed zeros or ones, it is just as rationally correct to accept that there exists such an x that rationally yields these patterns although we might not be able to display some of the features of these patterns in objective reality. There are many mathematical expressions that deterministically yield what many physical scientists maintain is physical behavior that is neither controlled nor rationally predicted. Thus, one simply needs to acknowledge that, in a classical sense, patterns such as these can be deterministic. (On a deeper level, it is actually not necessary that one accept this type of deterministic approach. The facts are that, as predicted, the intelligent agency part holds, in general [3, 5] via patterns pre-designed by a higher-intelligence.)

What is the a reason that many in the scientific community continue to expound their notions of random behavior rather than to acknowledge that it is possible that such behavior satisfies intelligently designed patterns? One of the foremost builders of mathematical models states:

> As to the inherent randomness of Nature, this appears to be as much a question of subjective psychology as it is a matter of physics and mathematics . . . [2, p. 229].

In Chapter 5 of [2], we find some strict analysis of what is there called "deterministic chaos." In reference to Quantum Theory, Casti writes

> For us the main conclusion to be drawn from this body of work is that Nature *could* be deterministic as Einstein felt, but if so, that kind [quantum physical] of determinism is far different from that with which we are familiar from everyday life [2, p. 230].

The reason for the *could* is that deterministic chaos appears random when compared with assumed physically random behavior. **But, one cannot state that <u>all</u> behavior accepted as physically random is produced by some explicit set of "humanly" applicable instructions that deterministically yield the behavior.** Further, no matter what sequence of successes or failures we observe and analyze, the finite nature of such a sequence, in general, does not yield complete evidence that the behavior satisfies some probability model or not. That is, actual probabilistic model predictions, as these models are constructed by us, for such behavior need neither exist nor be known to us. Then the work on deterministic chaos shows that even if a probabilistic model prediction is satisfied, the events *could have been* deterministically produced.

The term "randomness," with but a vague definition, is used by many science-communities in order to present a psychological foundation for their philosophy. Their only recourse, when presented with deterministic accounts for what they claim is unguided lawless individual behavior, is to reject or ignore the additional mathematical language. Because of the necessary "*could be*," they are allowed to reject a basic process allowed by the scientific method. What happens is a complete ad hoc rejection of anything that might be deterministic in character (e.g. classical dynamics). Consider the following totally psychological and philosophic statement, which is typical of how this fact is handled by many science-communities.

> . . . there is no place for true randomness in deterministic classical dynamics (although of course a complex classical system can exhibit behavior that is in practice indistinguishable from random) [9, p. 4].

4. Is Randomness other than a Philosophic Notion?

It is easily shown that the term "random" is often used for philosophic reasons only since it can be eliminated from scientific descriptions for physical-system behavior without altering the physical content of the description. Note that relative to the intelligent agent language employed, one can contend that all these types of mathematically presented deterministic statements are intelligently designed, at least, on the human level of intelligence and they satisfy exactly these patterns of behavior. But, even in the most general case where no such deterministic statement is found, it is shown in [3] and [5] that the following statement is still fact. *It is rational to assume that all probabilistic physical-system behavior is designed by an higher-intelligence and the occurrence or non-occurrence of each physical event satisfies a very special higher-intelligence design.*

Of great importance is what is mentioned in the archived version in [5]. The basic Theorem 2.1 can be easily modified and the convergence requirement removed and apparent "chaotic" behavior occurs. In this case, such sequences of physical E or E′ events still carry the two levels of higher-intelligence design discussed below. These results are independent from the remarks made by Bohm [1], Casti [2], Kac [7] and others who investigate deterministic processes that model assumed random behavior.

The following is shown explicity in [5]. Each such sequence of physical success E or failure E′ results, such as for the mentioned photons and <u>all other</u> applicable behavior that is claimed to be randomly produced, whether the sequence satisfies a probabilistic model or not, is actually designed by a higher-intelligence in two ways. Interpreting theorems such as 2.1 in [5], it is first shown that, for each number p, $0 \leq p \leq 1$, each possible collection of the E or E′ events that leads to the relative frequency sequence that converges to p is intelligently designed by a higher-intelligence as a complete collection. This result is obtained by application of a pure ultralogic operator. Then as remarked at the end of [5], for each such sequence of relative frequencies there is also a second ultralogic that generates a hyper-logic-system. Then hyper-deduction yields a sequence of successes or failures, in a correct order, for each converging sequence of relative frequencies. Thus, such successes or failures and the order in which they are obtained follow higher-intelligence designs. These two levels of higher-intelligent design also follow without the sequence actually converging to any such p. In which case, this is often described as physical chaotic behavior.

Obviously,we are not a higher-intelligence and, hence, cannot, relative to our ordinary senses, <u>directly</u> observe higher-intelligence behavior. But, we can have indirect knowledge that all observed behavior satisfies hyper-rationally designed patterns. Obviously, this also satisfies the above quoted statement that this type of determinism ". . . . is far different from that with which we are familiar from everyday life."

Possibly more remarkable is what occurs when numerical data-distributions are obtained from actual physical behavior. In [5], it is shown how to consider distributions as composed of "cells" (intervals) for the usual histogram display. There can be many, many such cells. The language of "Cartesian products" is used to determine the properties of such identified data-sets. An event E occurs if a numerical value falls into a particular cell. Then the event E′ identifies all the other cells where it does not occur. Below is a three cell example as given in [5]. This example is obtained when distinct members of a finite data-set are selected. Once a selection of a data-set member is obtained, the data-set has that member removed until the set is exhausted. Such displays occur no matter how the selections are made either by man or machine.

The first coordinate is the selection number. An ordered pair (a, b) is the ordered pair representation for the rational number b/a. In this case, 6 members of a data-set are selected. The second coordinate is the cumulative "successes" that a numerical value falls into that cell.

$$g_{ap1} = (1,1), (2,1), (3,1), (4,2), (5,2), (6,2)$$

$$g_{ap2} = (1,0), (2,1), (3,2), (4,2), (5,2), (6,3)$$

$$g_{ap3} = (1,0), (2,0), (3,0), (4,0), (5,1), (6,1)$$

The "partial sequence" g_{ap1} [resp. g_{ap}, g_{ap3}] is considered a restriction of a sequence that converges to 1/4 [resp. 1/2, 1/4].

The collection of cells, where each displays such successes or failures, satisfies a multidimensional pure higher-intelligence logical process. The dimensionality depends upon the number of cells. Hence, they are all hyper-logically related as a collection. For each cell, the sequence of successes or failures satisfies a higher-intelligence hyper-rationally ordering for each converging relative frequency. Remarkably, this result will occur no matter how one actually selects the members of a data-set. Thus under every mode of human or machine selection of this type, the results display two distinct levels of higher-intelligence design.

> The above results for distributions demonstrate how a general collection of seemingly probabilistically guided results are designed in such a manner that they satisfy a hyper-rational design as a general collection and maintain a designed higher-rational order for the events E or E′. Analysis shows that the reason why the actual events as observed over different time periods, when parameters have most likely changed, remain grouped about a probability p is that the events are hyper-rationally designed to follow these different patterns for these different time periods. And these patterns, if continued ad infinitum, continue to converge to the proper value.
>
> Of course, observations only indicate finite collections of occurrences that, when relative frequencies are analyzed, appear to converge only to various q that approximate the p. The fact that this occurs is, necessarily, a designed aspect of these patterns. Hence, aspects of these patterns are designed by a higher-intelligence and, although members of the entire collection of such events may appear to be independent one-from-another, they are actually hyper-rationally related.

> These conclusions follow in the same scientific manner as do most conclusions within quantum physics. Almost all entities and processes that are claimed to exist within quantum theory can only be **indirectly** detected. Further, many are not predicted but rather accepted as hypotheses. This means that the theoretical entities and processes, which cannot be directly observed, are used to predict the behavior of gross matter. The acceptance of this theory is a philosophic stance. The mathematical model in [5] for such probabilistic behavior and its immediate and obvious interpretation via intelligent design has the exact same feature with a significance difference. As shown in the proof of Theorem 2.1, this intelligent design feature is predicted from performable finite behavior and NOT assumed as an hypothesis. *This means that, in general, higher-intelligence design conclusions are stronger than the conclusions indirectly obtained from the standard quantum theory.*
>
> As mentioned, if randomness is assumed and not associated with a probability statement, then, even in this case, such claimed randomness is produced by an operator that has an higher-intelligence signature. *Thus, design by an higher-intelligence is associated with all claimed random behavior and such behavior is neither lawless nor without guidance, when a science-community's theory is extended to include these new features.*

Although not using a specific term for the notion, one of the first individuals to argue that some randomness appears to be language dependent is D. Bohm [1]. He uses the idea of different levels of chance behavior. At one level, the claimed randomness that is encapsulated by Born's probability distribution is considered as the final unexplained property of matter. But, on the other hand, Bohm has a form of random behavior at a lower level, so to speak, and what was previously thought to be lawless behavior at a previous level is now guided behavior [1, pp. 111-115]. Of course, if such a Bohm level existed, then the material in [5] applies to it. Hence, such a Bohm approach is not necessary for this purpose.

Does an actual description for physical behavior require that the notion of randomness be mentioned in order to convey an accurate mental image of the behavior? On page 48 of [1], Bohm gives the usual explanation for what is know as Brownian motion. The following is a copy of this explanation but any reference to "random" or "unregulated" behavior is removed. The portions removed are indicated by the symbols [].

> . . . we first note that, although each smoke particle is small, it still contains of the order of 10^8 atoms or more. Thus, when it is struck by a molecule of gas in which it is suspended, it will receive an impulse which causes it to change its velocity slightly. Now the gas molecules are moving quite rapidly (with velocity of the order of 10^4 cm/sec.), but because the

smoke particle is much heavier than an atom, the result of its being struck by an individual atom will be a comparatively small change of velocity. Since it is being struck continually [] by the gas molecules, we expect to obtain a corresponding slow [] fluctuation in the speed of the small particle. The larger the particle, the less will be the fluctuation. Thus, some fluctuation in velocity will persist even for particles of macroscopic size (such as a chair), but its magnitude will be completely negligible. To obtain an appreciable effect we need to go to sub-microscopic bodies.

> When the mean speed of the fluctuation for particles of a given size was calculated, it was found to agree with that observed, within experimental error. . . . Later more direct evidence was found; for with modern techniques and apparatus it became possible to measure the velocities of individual atoms, and thus to show that they are really moving [] with the distribution of velocities predicated by the theory.

The operational notions of finding a statistical mean and also showing that the velocities satisfy a physical probability distribution are retained. Since one uses statistical tests to determine that a distribution would be an appropriate way to predict such behavior, via a probabilistic language, then even at this additional depth of analysis the philosophic notion of unregulated or random behavior need not be included in the description. Indeed, a science-community that is really interested in presenting truth, rather than forcing their philosophy upon an individual, would replace any mention of unregulated behavior with a new term. I propose that the new scientifically verified technical term be **mindom**. [Said mine'dum].

5. Mindom.

> **Mindom**. A noun or adjective that means physical-system behavior that is intelligently designed, and produced, sustained or guided by intelligently designed actions via the GGU-model, and the patterns displayed are claimed to be either (1) modeled by a probability model, or (2) composed of individual or group events that are considered as unregulated or unpredictable via other forms of scientific analysis, or (3) (prior to the twenty-first century) considered as random (i.e. classically random).

From this moment on, one should write "mindom walk," "mindom quantum fluctuations," "mindom mutations" and the like. That is, in all the literature, and all discussion where, for physical behavior, the term "random" is employed, it needs to be replaced with the term mindom.

Other terms that are abused by scientific-communities are the terms "order" and "disorder." These are most often used in connection with various applications of the Second Law of Thermodynamics and exhibited configurations when entities are in "thermal" (i.e. energy) equilibrium. But these terms are entirely misleading since they don't actually refer to what is either a mathematical order or even an ordered array as humanly observed. The use of this term is but another attempt to force upon us the philosophic notion of randomness.

In a major textbook and in the section entitled "Entropy and Disorder," relative to energy states, Tipler fills a box with gas at assumed thermal equilibrium and moves the box along a frictionless table and then the box is stopped by a wall. The notion is of "ordered" energy that can do work in the sense that the entire system, the box with the gas, is in an energy state that can do work until stopped by the wall. But, once this movement stops, then the gas's internal energy attains a state where it cannot do this same type of work.

> This is the gas's internal thermal energy, which is related to temperature; it is random, unordered energy. . . . The gas now has the same total energy, but now all of it is associated with the random motion of its molecules about its center of mass, which is now at rest. Thus the gas has become less ordered, or more disordered, and it has lost the ability to do work [10, p. 577].

In the usual case, the gas molecules satisfy a well-defined deterministic energy distribution function. Does the notion of non-ordered really have any meaning? Tipler tries to illustrate that this might refer to statistical probability for an isolated system of a few molecules. He separates the box into two sections. The random notion comes into play when he requires each gas particle to have an equally likely chance of moving into the "left" or "right" section. Under these conditions, Tipler claims that the probability for one and only one of the 10 gas molecules to move into the left section is 1/2. The probability for all ten particles to move simultaneously into the left section is $(1/2)^{10}$. Hence, he claims that one molecule in the left section is "disorder" while all ten being in the section is order [10, p. 583]. This is rather not the case.

Usually, what we need is a macroscopically large quantity of gas confined to a box. Then evidence indicates that, as time progresses for this isolated system, the point density of the gas tends towards a mathematically "simple" probability distribution function. The converse also appears to be the case. [The system also tends towards a similar energy probability distribution.] Relative to the statistical behavior of such gas molecules, Maxwell states after his equation 57:

> We may therefore interpret the expression (57) as asserting that the density of a particular kind of gas at a given point is inversely proportional to an exponential function whose index is half the potential energy of a single molecule of the gas at that point, divided by the average kinetic energy corresponding to a variable of the system [8].

I do not agree that the resulting probability density function yields less "ordered" (i.e. disordered) behavior than if such a function did not exist. Obviously, as the isolated system tends towards thermal equilibrium, we have individual mindom behavior in the strong sense since such a distribution function begins to reveals itself. The same can be said for the speed and energy distributions.

I accept that, in this case, the notion of order or disorder is a philosophic notion that is but an attempt to force the philosophic notion of random on the scientific world. Hence, a more appropriate term is necessary for what actually occurs when physical-systems behave in this way, such as when one applies the Second Law of Thermodynamics. I replace the term “ordered behavior” with the term *complex behavior.* I replace the term “disordered behavior” with the term that actually implies how the density, speed and energy are distributed. I use the term *simple behavior.* In fact, this approach has been used previously as an actual measure of information. Of course, all such behavior is intelligently pre-designed and produced, sustained or guided by intelligently designed actions.

From the references, it should be self-evident that these intelligent design results do not imply that each previously assumed random-styled physical behavior is generally deterministic. They do imply that each previously assumed random-style of physical behavior is generally “hyper-deterministic.” This means that a “higher” logic-system composed of members taken from a “higher” language ***L** is used to hyper-rationally design physical behavior. The GGU-model gives specific hyper-rational processes [B] that produce these designed patterns. As pointed out many times, the complete details of hyper-determinism cannot be known due to the existence of ultranatural theories, ultranatural laws and ultranatural events. We can only have an imprecise comprehension as to what is actually happening. For example, if one assumes that a change in a physical parameter within our universe is a discrete change produced by a discrete process, it has been shown that in the Nonstandard Physical World such a change is a restriction of a “continuous” change produced by a continuously applied process [6]. One can choose either of these two modes for such physical behavior.

Summarizing: *Via prediction from human methods used for construction, all physical-system behavior is first intelligently pre-designed. Then such behavior is produced, sustained or guided by intelligently designed actions that, under physical conditions, yield intelligently designed patterns of behavior. I note that since the designing intelligence has designed all of the intelligent actions, then they are but manifestations of the designing intelligence. Such an intelligence is an higher-intelligence.*

The above intelligent design statements are products of the GID interpretation of the General Grand Unification (GGU) model. Even if one does not utilize the GID interpretation, the physical GGU-model still applies and exhibits a higher-intelligence design signature. The interpreted GGU-model is so scientific in character, that whenever an individual conducts a scientific experiment that verifies a statement, then the experiment also verifies the interpreted GGU-model. It should be self-evident that evidence for the higher-intelligence design interpretation is indirect in character, as is most evidence within subatomic physics and early history cosmology.

Since the GGU-model yields Theories of Everything, then the GID interpretation implies that the production of and alterations in the behavior of each physical-system within <u>any</u> universe is intelligently designed by a higher intelligence. This does not eliminate the philosophical notion of "free well." This notion is retained via the procedures discussed in [3], Section 4.3, where participator alterations in physical-system behavior is modeled. Finally, the results discussed in this article may contradict firmly held philosophic beliefs. If this is the case, then comprehension may be limited.

NOTES

(1) Not all mathematically predicted entities need to be applied to physical scenarios. Infinitely many solutions to differential equations are not so applied. For the results in [5], the general Complete GGU-model interpretation is better comprehended if only the internal language is employed.

(2) For the GGU-model, all physical system behavior is pre-designed. When this behavior is realized physically it becomes "designed" behavior. Except for human behavior, physical behavior carries neither a "good" nor "bad" moral label. Theologically, humankind was not created to exist in this present universe. The physical regulations satisfied within the Garden of Eden were highly different from those that satisfy physical behavior within our present universe. Humankind may consider such regulations as morally good or bad for physical survival, but such labels are **not relative to our universe's design.** Mankind, via Adam and Eve's choice, must now struggle to maintain itself within a highly destructive environment.

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